Health Bulletin

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Multiple Myeloma Mortality Study

Multiple myeloma is a cancer of white blood cells which primarily affects older people. Previous studies of workers at the Hanford site had noted an increased risk of dying from multiple myeloma among workers with higher occupational exposure to external ionizing radiation. The goal of this study was to include a larger number of cases of multiple myeloma, evaluate radiation dose, and measure other occupational exposures that might be linked to multiple myeloma. Four facilities were selected for study: Hanford Site, Los Alamos National Laboratory, Oak Ridge National Laboratory, and Savannah River Site. The researcher in charge of the study was Dr. Steve Wing at the University of North Carolina, Chapel Hill with funding from the National Institute for Occupational Safety and Health.

The study was based on ninety-eight (98) workers who died from multiple myeloma among employees who had ever worked at the four facilities before 1979. Three hundred ninety-one (391) workers from the same facilities who did not die of multiple myeloma were selected for comparison with the myeloma cases.

The comparison employees for each myeloma case were born about the same time as the case and lived at least as long. Plant records were reviewed to construct work histories for both groups.

Dr Wing found that the total cumulative radiation exposures were similar among those workers who had died of multiple myeloma and the comparison workers. However, the total radiation exposure received after age 44 was associated with an increased risk of multiple myeloma. For each 10 mSv (1 rem) dose received after age 44 years, a seven per cent (7%) increase in the risk of multiple myeloma was observed (range 1% to 13%).

In addition, the investigator reported that none of the 15 other workplace exposures studied were more common among the multiple myeloma cases than among the comparison employees. These agents included metals, solvents, and non ionizing radiation such as microwaves.

In January 1998, the results of this study were presented to workers at the four study facilities. The report was published in the April 2000 issue of the Annals of Epidemiology. A copy of the article is available through the DOE Reading Rooms. The results of this study have been provided to committees that review and make recommendations regarding radiation health protection standards in the United States. If you have any questions you may contact Dr. Gerald Petersen on (301) 903-2340.